Claims:

1. An optical imaging contrast agent with affinity for an abnormally expressed biological target associated with endometrioses.

5

2. A contrast agent as claimed in claim 1 with molecular weight below 10000 Daltons.

3. A contrast agent as claimed in claim 1 or 2 of formula I

$$V\text{-}L\text{-}R \qquad (I)$$

10   wherein V is one or more vector moieties having affinity for an abnormally expressed target in endometriosis, L is a linker moiety or a bond and R is one or more reporter moieties detectable in in vivo optical imaging.

4. A contrast agent as claimed in any of claims 1 to 3 comprising a contrast agent

15   substrate, wherein the target is an abnormally expressed enzyme, such that the contrast agent changes pharmacodynamic properties and/or pharmacokinetic properties upon a chemical modification from a contrast agent substrate to a contrast agent product upon a specific enzymatic transformation.

20   5. A contrast agent as claimed in any of claims 1 to 4 having affinity for any of the targets selected from angiogenesis targets, adhesion molecules, estrogen receptors, progesterone receptors, Cathepsin H and Cathepsin S, aromatase, reductase, CD10, endoglin, haptoglobin and cyclin D2.

25   6. A contrast agent as claimed in claims 3 or 4 wherein V is selected from peptides, peptoid moieties, oligonucleotides, oligosaccharides and lipid-related compounds and traditional organic drug-like small molecules.

7. A contrast agent as claimed in any of claims 3-6 wherein R is a dye that interacts

30   with light in the wavelength region from the ultraviolet to the infrared part of the electromagnetic spectrum.

8. A pharmaceutical composition for optical imaging for diagnosis of endometriosis, for follow up of progress of endometriosis, or for follow up of treatment of

35   endometriosis, comprising a contrast agent as defined in any of claims 1 to 7 together with at least one pharmaceutically acceptable carrier or excipient.

9. Use of a contrast agent as claimed in any of claims 1 to 7 for the manufacture of a diagnostic agent for use in a method of optical imaging of endometriosis involving administration of said diagnostic agent to an animate subject and generation of an image of at least part of said subject.

10. A method of generating an optical image of an animate subject involving administering a contrast agent to said subject and generating an optical image of at least a part of said subject to which said contrast agent has distributed, characterized in that as said contrast agent is used a contrast agent as defined in an any of claims 1 to 7.

11. Method as claimed in claim 10 for diagnosis of endometriosis, for follow up the progress of endometriosis development or for follow up treatment of endometriosis using a contrast agent as defined in any of claims 1 to 7.

12. Use of a contrast agent as defined in any of claims 1 to 7 for optical imaging of endometriosis.